Empowered by Innovation NEC

NEC Express5800/R120d-2M Configuration Guide

Introduction

This document contains product and configuration information that will enable you to configure your system. The guide will ensure fast and proper configuration of your NEC EXPRESS5800 server.

March 2012
Revision 1.0
NEC Corporation

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Technical Specification

Key Features

- High performance with the latest Intel® Xeon® processor E5-2600 product family
- Up to 768 GB of high speed DDR3-1333 memory
- High energy efficiency with power capping feature and 80 PLUS® Platinum power supply
- Full manageability by integrated EXPRESSSCOPE Engine 3

Specification

(1 / 2)

Model		R120d-2M			
Part Number		N8100-1793F			
Processor	**Type**	Intel® Xeon® processor E5-2609	Intel® Xeon® processor E5-2630L	Intel® Xeon® processor E5-2640	Intel® Xeon® processor E5-2643
	Clock speed	2.40 GHz	2 GHz	2.50 GHz	3.30 GHz
	Number of Processors	1 to 2			
	Cache	10 MB	15 MB	15 MB	10 MB
	Cores and Threads	4C-4T	6C-12T	6C-12T	8C-16T
Chipset		Intel® C602-J Chipset			
Memory	**Type**	DDR3-1333 ECC Unbuffered Low Power DIMM, DDR3-1600 ECC Registered Low Power DIMM, DDR3-1333 ECC Load Reduced DIMM			
	Standard Capacity	0 GB			
	Maximum Capacity	768 GB (24 x 32 GB)			
	Memory protection	ECC, x4 SDDC, Memory Mirroring, Memory Lockstep, Memory Sparing			
Internal Storage	**Standard Capacity**	0 GB			
	Maximum Capacity	SAS HDD : 14.4 TB (16 x 900 GB) SATA HDD : 16 TB (16 x 1 TB) SAS SSD : 6.4 TB (16 x 400 GB) SATA SSD : 1.6 TB (16 x 100 GB)			
	Disk Controller	SATA : 6 Gb/s (Integrated) SAS: 6 Gb/s (Optional)			
	RAID	SATA : RAID 0/1/5/6/10/50/60 (Optional) SAS : RAID 0/1/5/6/10/50/60 (Optional)			
	Hot Plug	Supported			
	Optical Disk Drive	Optional			
	Optical Drive Bays [free]	1 [1]			
	3.5-inch Media Bays [free]	1 [1]			
	Disk Drive Bays [free]	16 [16] [1]			
Expansion Slots [free]	**Standard**	Total: 7 slots available 2[2] x PCIe 3.0 x8 (x16 connector) 2[2] x PCIe 3.0 x4 (x8 connector) 1[1] x PCIe 3.0 x8 (x16 connector) [2] 1[1] x PCIe 3.0 x8 (x8 connector) dedicated LAN slot 1[1] x PCIe 3.0 x8 (x8 connector) dedicated RAID slot			

Model		R120d-2M			
Expansion Slots [free] (Cont.)	**Optional Riser Card (N8115-25)**	Total: 6 slots available 1[1] x PCIe 3.0 x16 (x16 connector) 2[2] x PCIe 3.0 x4 (x8 connector) 1[1] x PCIe 3.0 x8 (x16 connector) [2] 1[1] x PCIe 3.0 x8 (x8 connector) dedicated LAN slot 1[1] x PCIe 3.0 x8 (x8 connector) dedicated RAID slot			
	Optional Riser Card (N8116-26)	Total: 7 slots available 1[1] x PCIe 3.0 x8 (x16 connector) 2[2] x PCIe 3.0 x4 (x8 connector) 1[1] x PCIe 3.0 x8 (x16 connector) [2] 1[1] x 64-bit/ 133 MHz PCI-X 1[1] x PCIe 3.0 x8 (x8 connector) dedicated LAN slot 1[1] x PCIe 3.0 x8 (x8 connector) dedicated RAID slot			
	Optional Riser Card (PCI)	Total: 7 slots available 1[1] x PCIe 3.0 x8 (x16 connector) 2[2] x PCIe 3.0 x4 (x8 connector) [2] 2[2] x 64-bit / 33 MHz 5V PCI 1[1] x PCIe 3.0 x8 (x8 connector) dedicated LAN slot 1[1] x PCIe 3.0 x8 (x8 connector) dedicated RAID slot			
Video	**Controller (VRAM)**	Integrated in Server Management Controller (32MB)			
	Resolution / Color	1280 x 1024 / 16.7M [3]			
Interfaces		2 x VGA (15-pin mini D-sub, 1 x front, 1 x rear) 1 x Serial (9-pin mini D-sub, RS232-C, Serial B, 1 x rear) 9 x USB2.0 (2 x front, 4 x rear, 3 x internal) 2 x 1000BASE-T LAN connector (RJ-45, 2 x rear) 1 x Management LAN connector (RJ-45, 1 x rear)			
Server Management		EXPRESSSCOPE Engine 3			
Redundant Fan		Optional, hot plug			
Redundant Power Supply		Optional, hot plug			
Power Supply		1 to 2 x 400 Watt or 750 Watt or 1000 Watt 80 PLUS® Platinum certified hot plug PSU 100-240 VAC ± 10% 50 / 60 Hz ± 3 Hz			
Power Consumption	**(Max. Config, Idling)**	353 VA / 348 Watt	359 VA / 354 Watt	363 VA / 357 Watt	354 VA / 349 Watt
	(Max. Config, Operating)	850 VA / 840 Watt	810 VA / 800 Watt	880 VA / 870 Watt	950 VA / 940 Watt
Acoustical Noise (Sound Pressure Level) [4]	**Max. Config, Idling**	49.3dB	49.4dB	49.3dB	49.3dB
	Max. Config, Operating	56.4dB	53.6dB	56.4dB	57.6dB
Dimensions (W x D x H)		448.0 x 735.8 [5] x 87.2 mm / 17.6 x 28.9 [5] x 3.4 in (2U)			
Weight (Minimum / Maximum)		20.5 kg / 33 kg, 45.19 lbs. / 72.75 lbs.			
Temperature, Relative Humidity (non-condensing)		Operating: 10° to 40° C [6] / 50° [6] to 104° F, 20 to 80% Non-Operating: -10° to 55° C / 14° to 131° F, 20 to 80%			
Regulatory and Safety		FCC, CE, BSMI, CCC, UL, CB, RoHS, WEEE			
Operating Systems		Microsoft® Windows Server® 2003 R2, Standard Edition Microsoft® Windows Server® 2003 R2, Enterprise Edition Microsoft® Windows Server® 2003 R2, Standard x64 Edition Microsoft® Windows Server® 2003 R2, Enterprise x64 Edition Microsoft® Windows Server® 2008 Standard Microsoft® Windows Server® 2008 Enterprise Microsoft® Windows Server® 2008 Standard (x64) Microsoft® Windows Server® 2008 Enterprise (x64) Microsoft® Windows Server® 2008 R2 Standard Microsoft® Windows Server® 2008 R2 Enterprise Red Hat Enterprise Linux 5.7 or later (x86) [7] Red Hat Enterprise Linux 5.7 or later (EM64T) 7 Red Hat Enterprise Linux 6.1 or later (x86) [7] Red Hat Enterprise Linux 6.1 or later (x86_64) [7] VMware ESXi 5.0 Update 1			

1 An optional drive cage is required to install more than 8 hard drives.
2 Available only when the second processor is configured.
3 Maximum resolution available via EXPRESSSCOPE Engine 3 remote console is 1280 x 1024 / 65K colors.
4 Noise emission was measured in accordance with ISO 7779. The actual value may vary by the operating environment.
5 When mounting 1000 Watt power supply, the depth is 770 mm (30.31 in).
6 Operable up to 35°C (95°F) when Xeon processor E5-2643 is configured with an added optional drive cage.
7 For Linux support, contact our sales representative or go to the NEC website at: http://www.nec.com/global/prod/express/linux/index.html

(2 / 2)

Model		R120d-2M			
Part Number		N8100-1793F			
Processor	**Type**	Intel® Xeon® processor E5-2650	Intel® Xeon® processor E5-2650L	Intel® Xeon® processor E5-2670	Intel® Xeon® processor E5-2690
	Clock speed	2 GHz	1.80 GHz	2.60 GHz	2.90 GHz
	Number of Processors	1 to 2			
	Cache	20 MB	20 MB	20 MB	20 MB
	Cores and Threads	8C-16T	8C-16T	8C-16T	8C-16T
Chipset		Intel® C602-J Chipset			
Memory	**Type**	DDR3-1333 ECC Unbuffered Low Power DIMM, DDR3-1600 ECC Registered Low Power DIMM, DDR3-1333 ECC Load Reduced DIMM			
	Standard Capacity	0 GB			
	Maximum Capacity	768 GB (24 x 32 GB)			
	Memory protection	ECC, x4 SDDC, Memory Mirroring, Memory Lockstep, Memory Sparing			
Internal Storage	**Standard Capacity**	0 GB			
	Maximum Capacity	SAS HDD : 14.4 TB (16 x 900 GB) SATA HDD : 16 TB (16 x 1 TB) SAS SSD : 6.4 TB (16 x 400 GB) SATA SSD : 1.6 TB (16 x 100 GB)			
	Disk Controller	SATA : 6 Gb/s (Integrated) SAS: 6 Gb/s (Optional)			
	RAID	SATA : RAID 0/1/5/6/10/50/60 (Optional) SAS : RAID 0/1/5/6/10/50/60 (Optional)			
	Hot Plug	Supported			
	Optical Disk Drive	Optional			
	Optical Drive Bays [free]	1 [1]			
	3.5-inch Media Bays [free]	1 [1]			
	Disk Drive Bays [free]	16 [16] [1]			
Expansion Slots [free]	**Standard**	Total: 7 slots available 2[2] x PCIe 3.0 x8 (x16 connector) 2[2] x PCIe 3.0 x4 (x8 connector) 1[1] x PCIe 3.0 x8 (x16 connector) [2] 1[1] x PCIe 3.0 x8 (x8 connector) dedicated LAN slot 1[1] x PCIe 3.0 x8 (x8 connector) dedicated RAID slot			
	Optional Riser Card (N8115-25)	Total: 6 slots available 1[1] x PCIe 3.0 x16 (x16 connector) 2[2] x PCIe 3.0 x4 (x8 connector) 1[1] x PCIe 3.0 x8 (x16 connector) [2] 1[1] x PCIe 3.0 x8 (x8 connector) dedicated LAN slot 1[1] x PCIe 3.0 x8 (x8 connector) dedicated RAID slot			

Model		R120d-2M			
Expansion Slots [free] (Cont.)	Optional Riser Card (N8116-26)	Total: 7 slots available 1[1] x PCIe 3.0 x8 (x16 connector) 2[2] x PCIe 3.0 x4 (x8 connector) 1[1] x PCIe 3.0 x8 (x16 connector) [2] 1[1] x 64-bit/ 133 MHz PCI-X 1[1] x PCIe 3.0 x8 (x8 connector) dedicated LAN slot 1[1] x PCIe 3.0 x8 (x8 connector) dedicated RAID slot			
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Video	Controller (VRAM)	Integrated in Server Management Controller (32MB)			
	Resolution / Color	1280 x 1024 / 16.7M [3]			
Interfaces		2 x VGA (15-pin mini D-sub, 1 x front, 1 x rear) 1 x Serial (9-pin mini D-sub, RS232-C, Serial B, 1 x rear) 9 x USB2.0 (2 x front, 4 x rear, 3 x internal) 2 x 1000BASE-T LAN connector (RJ-45, 2 x rear) 1 x Management LAN connector (RJ-45, 1 x rear)			
Server Management		EXPRESSSCOPE Engine 3			
Redundant Fan		Optional, hot plug			
Redundant Power Supply		Optional, hot plug			
Power Supply		1 to 2 x 400 Watt or 750 Watt or 1000 Watt 80 PLUS® Platinum certified hot plug PSU 100-240 VAC ± 10% 50 / 60 Hz ± 3 Hz			
Power Consumption	(Max. Config, Idling)	361 VA / 356 Watt	356 VA / 351 Watt	359 VA / 354 Watt	360 VA / 355 Watt
	(Max. Config, Operating)	880 VA / 870 Watt	830 VA / 820 Watt	920 VA / 910 Watt	960 VA / 950 Watt
Acoustical Noise (Sound Pressure Level) [4]	Max. Config, Idling	49.3dB	49.4dB	49.3dB	49.3dB
	Max. Config, Operating	56.4dB	53.6dB	56.4dB	57.6dB
Dimensions (W x D x H)		448.0 x 735.8 [5] x 87.2 mm / 17.6 x 28.9 [5] x 3.4 in (2U)			
Weight (Minimum / Maximum)		20.5 kg / 33 kg, 45.19 lbs. / 72.75 lbs.			
Temperature, Relative Humidity (non-condensing)		Operating: 10° to 40° C [6] / 50° [6] to 104° F, 20 to 80% Non-Operating: -10° to 55° C / 14° to 131° F, 20 to 80%			
Regulatory and Safety		FCC, CE, BSMI, CCC, UL, CB, RoHS, WEEE			
Operating Systems		Microsoft® Windows Server® 2003 R2, Standard Edition Microsoft® Windows Server® 2003 R2, Enterprise Edition Microsoft® Windows Server® 2003 R2, Standard x64 Edition Microsoft® Windows Server® 2003 R2, Enterprise x64 Edition Microsoft® Windows Server® 2008 Standard Microsoft® Windows Server® 2008 Enterprise Microsoft® Windows Server® 2008 Standard (x64) Microsoft® Windows Server® 2008 Enterprise (x64) Microsoft® Windows Server® 2008 R2 Standard Microsoft® Windows Server® 2008 R2 Enterprise Red Hat Enterprise Linux 5.7 or later (x86) [7] Red Hat Enterprise Linux 5.7 or later (EM64T) 7 Red Hat Enterprise Linux 6.1 or later (x86) [7] Red Hat Enterprise Linux 6.1 or later (x86_64) [7] VMware ESXi 5.0 Update 1			

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2 Available only when the second processor is configured

3 Maximum resolution available via EXPRESSSCOPE Engine 3 remote console is 1280 x 1024 / 65K colors.

4 Noise emission was measured in accordance with ISO 7779. The actual value may vary by the operating environment.

5 When mounting 1000 Watt power supply, the depth is 770 mm (30.31 in).

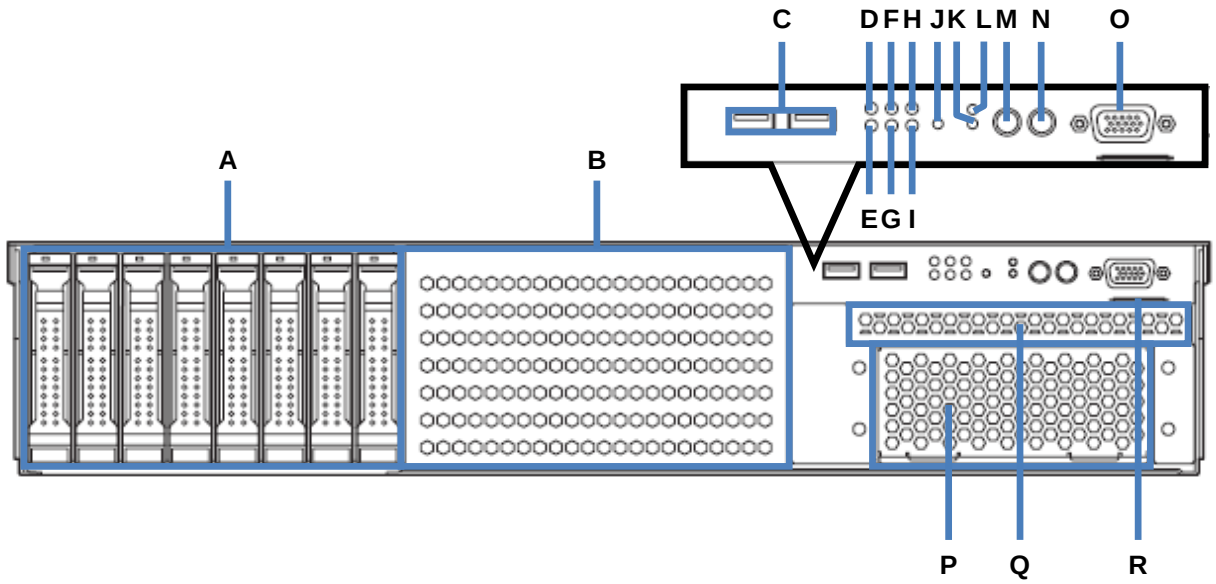
[6] Operable up to 35°C (95°F) when Xeon processor E5-2690 is configured with an added optional drive cage.

[7] For Linux support, contact our sales representative or go to the NEC website at: http://www.nec.com/global/prod/express/linux/index.html

External Views

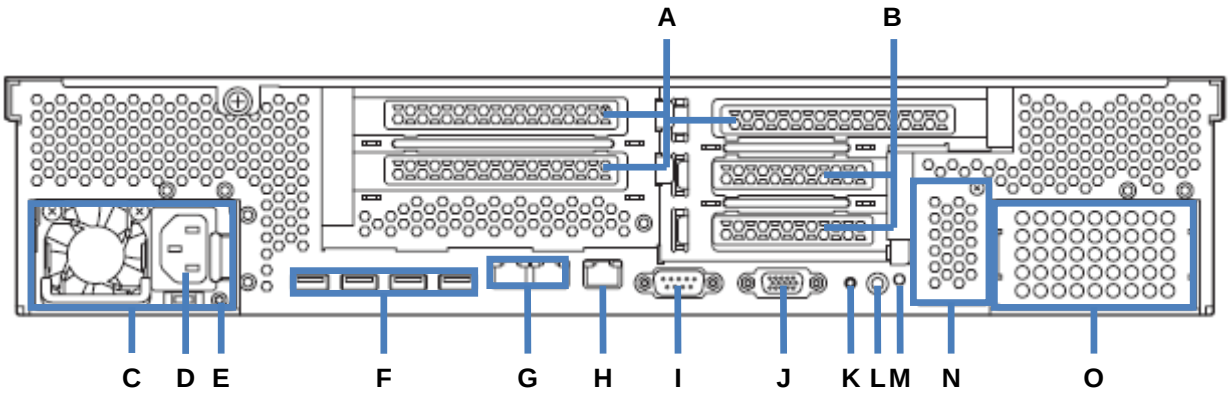
Front and Rear Views

Front View



Legend			
A.	2.5-inch Drive Bays	**J.**	BMC Reset Button
B.	2.5-inch Drive Cage Bay	**K.**	Dump (NMI) Button
C.	USB Connectors	**L.**	System Reset Button
D.	Data LAN 1 Activity LED	**M.**	UID LED Button
E.	Data LAN 2 Activity LED	**N.**	Power Button / Power LED
F.	Data LAN 3 Activity LED	**O.**	VGA Connector
G.	Data LAN 4 Activity LED	**P.**	Media Bay
H.	Hard Drive Activity LED	**Q.**	Optical Drive Bay
I.	System Status LED	**R.**	Pull-out Tab

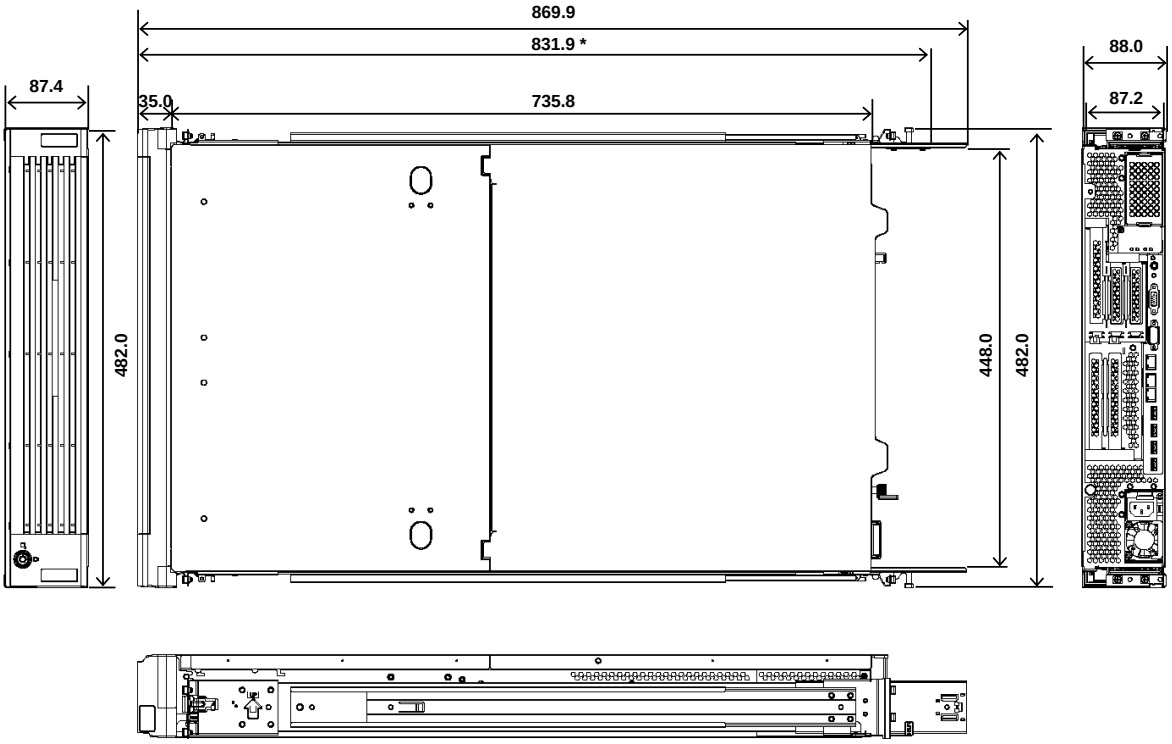
Rear View



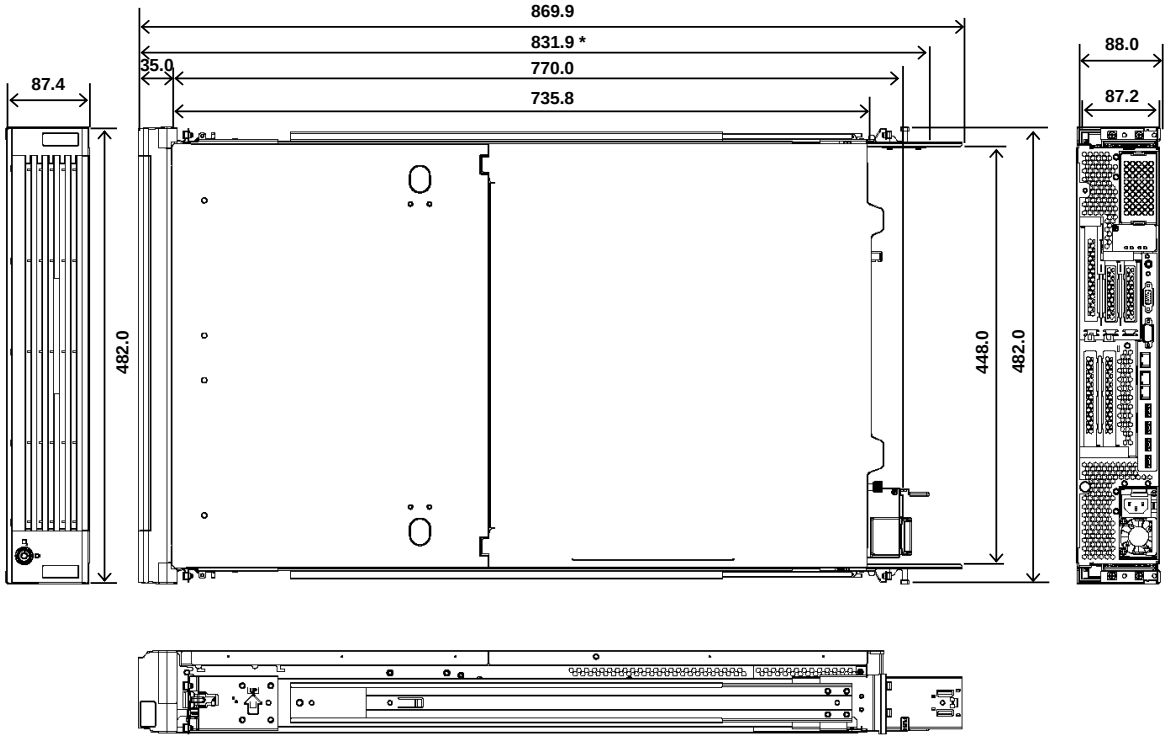
Legend			
A.	PCI Slots (Full-Height)	**I.**	Serial Port Connector
B.	PCI Slots (Low-Profile)	**J.**	VGA Connector
C.	Power Supply	**K.**	Dump (NMI) Switch
D.	AC Inlet	**L.**	UID Button/LED
E.	AC Power LED	**M.**	DC Power LED
F.	USB Connectors	**N.**	PCI Slot (LAN Riser)
G.	Data LAN Connectors	**O.**	Additional Power Supply Slot
H.	Management LAN Connector		

Dimensions (mm)

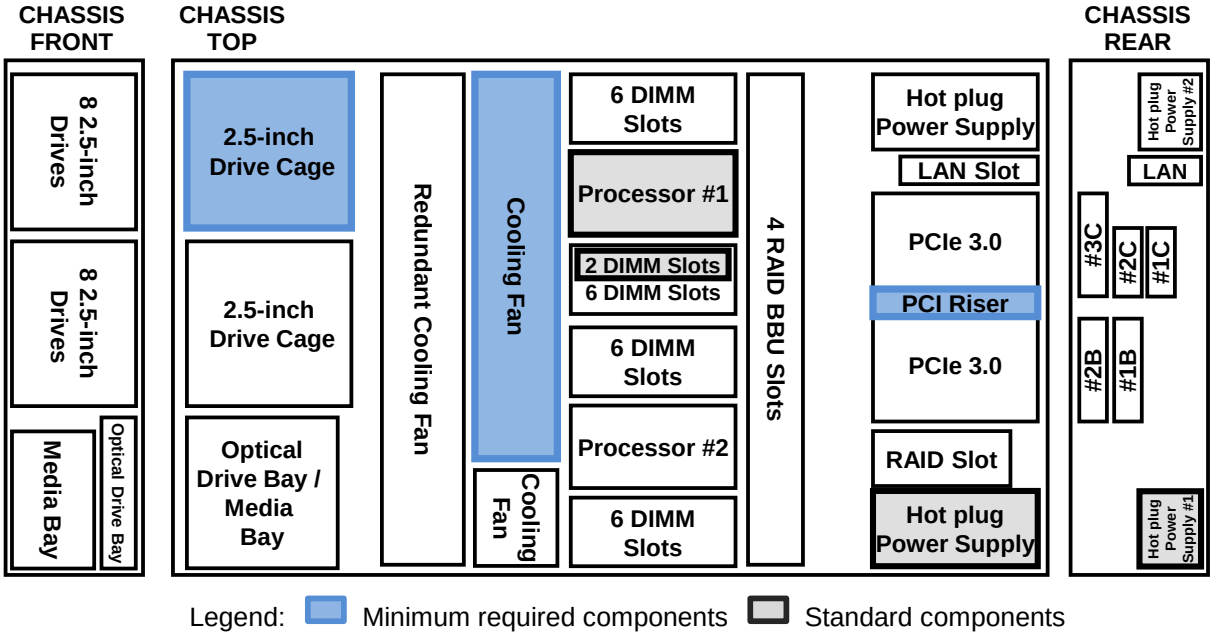
450 Watt or 800 Watt Power Supply Configuration



1000 Watt Power Supply Configuration



Configuration Diagram



Server Configuration

1 Base Models

Product Name / Description	Part Number
NEC Express5800/R120d-2M Server no processor, no RAM, no HDD, no ODD, no PSU, no front bezel Including: 2.5-inch HDD Cage, EXPRESSBUILDER DVD	N8100-1793F

NOTE:

- The base model must be ordered with a processor kit.

2 Processors and Heat Sink

Available sockets: 2

Category		Product Name / Description	Part Number
Processors **1 Processor Required**		**Xeon E5-2609 Processor Kit** Intel® Xeon ® Processor E5-2609 (2.40 GHz, 4C/4T, 10 MB)	N8101-545F
		Xeon E5-2630L Processor Kit Intel® Xeon ® Processor E5-2630L (2 GHz, 6C/12T, 15 MB)	N8101-546F
		Xeon E5-2640 Processor Kit Intel® Xeon ® Processor E5-2640 (2.40 GHz, 6C/12T, 15 MB)	N8101-547F
		Xeon E5-2643 Processor Kit Intel® Xeon ® Processor E5-2643 (3.30 GHz, 4C/8T, 10 MB)	N8101-548F
		Xeon E5-2650 Processor Kit Intel® Xeon ® Processor E5-2650 (2 GHz, 8C/16T, 20 MB)	N8101-549F
		Xeon E5-2650L Processor Kit Intel® Xeon ® Processor E5-2650L (1.80 GHz, 8C/16T, 20 MB)	N8101-550F
		Xeon E5-2670 Processor Kit Intel® Xeon ® Processor E5-2670 (2.60 GHz, 8C/16T, 20 MB)	N8101-551F
		Xeon E5-2690 Processor Kit Intel® Xeon ® Processor E5-2690 (2.90 GHz, 8C/16T, 20 MB)	N8101-552F
Heat Sink	**1st**	**Processor Heat Sink** For 1st Processor	(Standard)
	2nd	**Processor Heat Sink** For 2nd Processor, including cooling fan kit	N8101-553F

NOTE:

- Minimum one processor kit from above must be installed.
- The processors must be the same to configure dual processor system.

3 Memory

3.1 Memory Configuration

Refer to the section in accordance with your memory configuration:

- Independent Channel: Refer to **3.1.1**
- Memory Sparing Configuration: Refer to **3.1.2**
- Memory Mirroring / Memory Lockstep Configuration: Refer to **3.1.3**

3.1.1 Independent Channel Configuration

Available slots: 12 per processor

Category	Product Name / Description	Part Number
Unbuffered DIMM (UDIMM)	**8GB DDR3-1333 UNB Memory Kit** 2x 4GB Unbuffered ECC DIMM, DDR3L-1333(PC3L-10600) **NOTE:** - Up to four sets (eight slots) per processor can be installed - This DIMM doesn't support x4 SDDC.	N8102-435F
Registered DIMM (RDIMM)	**4GB DDR3-1600 REG Memory Kit** 2x 2GB Registered ECC DIMM, DDR3L-1600(PC3L-12800) **NOTE:** - This DIMM doesn't support x4 SDDC.	N8102-468F
	8GB DDR3-1600 REG Memory Kit 2x 4GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-469F
	16GB DDR3-1600 REG Memory Kit 2x 8GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-470F
	32GB DDR3-1600 REG Memory Kit 2x 16GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-471F
Load Reduced DIMM (LRDIMM)	**64GB DDR3-1333 LR Memory Kit** 2x 32GB Load Reduced ECC DIMM, DDR3L-1333(PC3L-10600)	N8102-440F

NOTE:

- Minimum one memory kit per processor must be installed.
- The configured memories must be identical.
- It is recommended to install memory kits in multiples of two (four identical DIMMs) for quad-channel symmetric memory configurations to increase memory transfer speed.
- When two processors are installed, balance the DIMMs across the two processors.
- Mix configurations of UDIMM/RDIMM/LRDIMM are not supported

3.1.2 Memory Sparing Configuration

Available slots: 12 per processor

Product Name / Description	Part Number
6GB DDR3-1600 REG Memory Kit 3x 2GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-476
12GB DDR3-1600 REG Memory Kit 3x 4GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-477
24GB DDR3-1600 REG Memory Kit 3x 8GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-499
48GB DDR3-1600 REG Memory Kit 3x 16GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-500

NOTE:

- Minimum one memory kit per processor must be installed.
- The configured memories must be identical.
- When two processors are installed, balance the DIMMs across the two processors.
- The logical memory capacity at the time of memory sparing becomes two-thirds of physical capacity with configurations less than 4GB DIMM and five-sixth physical capacity with configurations more than 8GB DIMM.
- The maximum memory transfer rate is 1066 MHz.

3.1.3 Memory Mirroring / Memory Lockstep Configuration

Available slots: 12 per processor

Product Name / Description	Part Number
4GB DDR3-1600 REG Memory Kit 2x 2GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-472
8GB DDR3-1600 REG Memory Kit 2x 4GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-473
16GB DDR3-1600 REG Memory Kit 2x 8GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-474
32GB DDR3-1600 REG Memory Kit 2x 16GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-475

NOTE:

- Minimum one memory kit per processor must be installed.

Memory Configuration Feature Comparison

See the table below for feature comparisons of memory configurations supported.

	Independent Channel	Memory Sparing	Memory Lockstep	Memory Mirroring
Performance	Best	Better	Better	Good
Data Protection	No	Multiple single bit error protection	No	Multiple single bit and multi bit error protection
Redundancy	No	Partly	No	Fully
Data Correction	ECC, x4 SDDC	ECC, x4 SDDC	ECC, x8 SDDC	ECC, x4 SDDC
Available Memory	Full physical memory	2/3 physical memory (2, 4GB DIMM) 5/6 physical memory (8, 16GB DIMM)	Full physical memory	Half physical memory
Available Memory Channels	4	4	4	4
Notes	-	All DIMMs in the system must be identical.	Paired DIMMs must be identical.	Paired DIMMs must be identical.

Maximum Memory Speed

See the table below for the actual maximum memory transfer speed in Independent Channel / Memory Sparing Configuration.

DDR3 memory speed depends on the type of DIMMs, the native memory bus speed of the memory controller and memory configuration. All memory buses operate at the clock frequency of the DIMM with the lowest frequency.

The maximum memory transfer rate is 1066 MHz with Memory Mirroring / Memory Lockstep Configuration.

Processor Type	Populated DIMMs	Memory Power Setting	DIMM Speed	
			Low (1.35V)	Normal (1.5V)
E5-2609	-	-	1066 MHz	1066 MHz
E5-2630L E5-2640	UDIMM: 4GB	-	1066 MHz	1333 MHz
	RDIMM: 2, 4, 8, 16 GB	Up to 8 DIMMs	1333 MHz	1333 MHz
		10 or more DIMMs	-	1066 MHz
	LRDIMM: 32GB	Up to 8 DIMMs	1066 MHz	1333 MHz
		10 or more DIMMs	1066 MHz	1066 MHz
E5-2650 E5-2650L E5-2643 E5-2670 E5-2690	UDIMM: 4GB	-	1066 MHz	1333 MHz
	RDIMM: 2, 4, 8, 16 GB	Up to 8 DIMMs	1333 MHz	1600 MHz
		10 or more DIMMs	-	1066 MHz
	LRDIMM: 32GB	Up to 8 DIMMs	1066 MHz	1333 MHz
		10 or more DIMMs	1066 MHz	1066 MHz

Maximum Available Memory

See the table below for the maximum memory size that you can actually use on your system.

The maximum available memory is less than the maximum physical memory supported by your system because some chipsets require PCI resource space of about 750MB. PCI resource requirements vary depending on the type and the number of PCI cards you are using.

Maximum Memory Size Supported by OS		Maximum Available Memory
Microsoft Windows Server 2003 R2, Standard Edition Microsoft Windows Server 2008 Standard	**4 GB**	**4 GB (HW-DEP enabled)** **App. 2 GB(HW-DEP disabled)**
Microsoft Windows Server 2003 R2, Standard x64 Edition Microsoft Windows Server 2008 Standard (x64) Microsoft Windows Server 2008 R2 Standard (x64)	**32 GB**	**32 GB**
Microsoft Windows Server 2003 R2, Enterprise Edition Microsoft Windows Server 2008 Enterprise	**64 GB**	**64 GB**
Microsoft Windows Server 2003 R2, Enterprise x64 Edition	**1 TB**	**768 GB**
Microsoft Windows Server 2008 Enterprise (x64) Microsoft Windows Server 2008 R2 Enterprise (x64)	**2 TB**	**768 GB**
Red Hat Enterprise Linux 5 Red Hat Enterprise Linux 6	**16 GB**	**16 GB**
Red Hat Enterprise Linux 5 (EM64T)	**256 GB**	**256 GB**
Red Hat Enterprise Linux 6 (x86_64)	**2 TB**	**768 GB**
VMware ESXi 5.0 [1]	**2TB**	**768 GB**

[1] Up to 1TB of main memory is available to each virtual machine.

4 Internal Hard Disk Drives

4.1 RAID Configuration

Refer to the section in accordance with your disk form factor and RAID configuration.

Up to eight 2.5-inch Drives

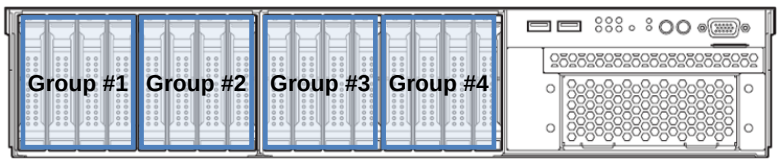
			Available Interface
Non-RAID		Refer to 4.2.1	SATA
RAID 0/1/10	512MB Cache	Refer to 4.2.2	SAS, SATA
RAID 5/6/50/60	512MB Cache	Refer to 4.2.3	SAS, SATA
	1GB Cache	Refer to 4.2.4	SAS, SATA

Up to sixteen 2.5-inch Drives

			Available Interface
RAID 0/1/10	512MB Cache	Refer to 4.2.5	SATA
RAID 5/6	512MB Cache	Refer to 4.2.6	SAS, SATA
	1GB Cache	Refer to 4.2.7	SAS, SATA

NOTE:

- Up to four hard drives can be installed in the Embedded SATA configuration.
- Hot plug insertion/removal are not supported in the Embedded SATA configuration.
- An optional RAID controller occupies one PCI slot.
- All hard drives within a RAID array should be of the same capacity and rotation speed.
- Use the same rotational speed of the SAS Hard drives in one system.
- Up to two kinds of drives can be mixed in one system
- To configure a large-capacity RAID array, it is recommended to configure in RAID 6 or RAID 60 in order to minimize the risk of becoming multiple hard drives failure during the RAID rebuilding process.
- It is recommended to set RAID array configuration drives less than eight in order to minimize the risk of becoming multiple hard drives failure.
- SAS and SATA hard drives must be installed in separate drive groups.



4.2 Internal Drive Configuration

4.2.1 Up to four Drives with Embedded SATA Controller

Category		Product Name / Description	Part Number
Storage Controller		**Embedded SATA Controller** 4 x SATA ports	(Standard)
Cable		**Internal SATA Cable** 1 x mini-SAS to 1 x mini-SAS	(Standard)
HDD Cage		**2.5-inch HDD Cage** 8 x 2.5-inch Hot-plug hard drive bays	(Standard)
Drive **4 slots available**	**SATA HDD**	**250GB 7.2K Hot Plug 2.5-inch SATA HDD** 1 x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SATA SSD	**100GB Hot Plug 2.5-inch SSD** 1 x 100 GB SATA SSD, 2.5-inch, 3Gb/s	N8150-707

NOTE:

- Hot plug insertion/removal are not supported in the configuration.
- The maximum transfer speed for Slot 2 and Slot 3 is 3 Gb/s.

4.2.2 Up to eight Drives with RAID 0/1 Controller with 512 MB Cache

Category		Product Name / Description	Part Number
Storage Controller Required		**RAID Controller (512MB, RAID 0/1)** LSI MegaRAID SAS 9267-8i RAID 0/1/10, 512 MB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 6Gb/s	N8103-149
RAID BBU Recommended		**RAID Battery Backup Unit** for LSI MegaRAID SAS 9267-8i	N8103-153
Cable		**Internal SAS/SATA Cable** 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
Drive Cage		**2.5-inch HDD Cage** 8 x 2.5-inch hot plug drive bays	(Standard)
Drive 8 slots available	**SAS HDD**	**300GB 10K Hot Plug 2.5-inch SAS HDD** 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
		450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
		600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
		900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
		73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
		146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
		300GB 15K Hot Plug 2.5-inch SAS HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD	**250GB 7.2K Hot Plug 2.5-inch SATA HDD** 1 x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD	**100GB Hot Plug 2.5-inch SAS SSD** 1 x 100 GB SAS SSD, 2.-inch, 6Gb/s	N8150-709
		400GB Hot Plug 2.5-inch SAS SSD 1 x 400 GB SAS SSD, 2.5-inch, 6Gb/s	N8150-710
	SATA SSD	**100GB Hot Plug 2.5-inch SSD** 1 x 100 GB SATA SSD, 2.5-inch, 3Gb/s	N8150-707

NOTE:

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- SAS and SATA hard drives must be installed in separate drive groups.
- Up to two kinds of drives can be mixed in one system.
- Please download RAID controller driver from the web to install Windows Server 2003 R2 in the configuration. http://www.nec.com/en/global/prod/express/download/index.html

4.2.3 Up to eight Drives with RAID 5/6 Controller with 512 MB Cache

Category		Product Name / Description	Part Number
Storage Controller Required		**RAID Controller (512MB, RAID 0/1)** LSI MegaRAID SAS 9267-8i RAID0/1/5/6/10/50/60, 512 MB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 6Gb/s	N8103-150
RAID BBU Recommended		**RAID Battery Backup Unit** for LSI MegaRAID SAS 9267-8i	N8103-153
Cable		**Internal SAS/SATA Cable** 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
Drive Cage		**2.5-inch HDD Cage** 8 x 2.5-inch hot plug drive bays	(Standard)
Drive 8 slots available	**SAS HDD**	**300GB 10K Hot Plug 2.5-inch SAS HDD** 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
		450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
		600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
		900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
		73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
		146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
		300GB 15K Hot Plug 2.5-inch SAS HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD	**250GB 7.2K Hot Plug 2.5-inch SATA HDD** 1 x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD	**100GB Hot Plug 2.5-inch SAS SSD** 1 x 100 GB SAS SSD, 2.-inch, 6Gb/s	N8150-709
		400GB Hot Plug 2.5-inch SAS SSD 1 x 400 GB SAS SSD, 2.5-inch, 6Gb/s	N8150-710
	SATA SSD	**100GB Hot Plug 2.5-inch SSD** 1 x 100 GB SATA SSD, 2.5-inch, 3Gb/s	N8150-707

NOTE:

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- Use the same rotational speed of the SAS Hard drives in one system.
- SAS and SATA hard drives must be installed in separate drive groups.
- Up to two kinds of drives can be mixed in one system.
- To configure a large-capacity RAID array, it is recommended to configure in RAID 6 or RAID 60 in order to minimize the risk of becoming multiple hard drives failure during the RAID rebuilding process.
- Please download RAID controller driver from the web to install Windows Server 2003 R2 in the configuration. http://www.nec.com/en/global/prod/express/download/index.html

4.2.4 Up to eight Drives with RAID 5/6 Controller with 1 GB Cache

Category		Product Name / Description	Part Number
Storage Controller **Required**		**RAID Controller (1GB, RAID 0/1/5/6)** LSI MegaRAID SAS 9267-8i RAID0/1/5/6/10/50/60, 1 GB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 6Gb/s	N8103-151
RAID BBU **Recommended**		**RAID Battery Backup Unit** for LSI MegaRAID SAS 9267-8i	N8103-153
SSD Caching **Recommended**		**MegaRAID CacheCade** for LSI MegaRAID SAS 9267-8i **NOTE:** - SSD used for cache is required - The SSD capacity which can be used as read cache is up to 512 GB.	N8103-156
Cable		**Internal SAS/SATA Cable** 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
Drive Cage		**2.5-inch HDD Cage** 8 x 2.5-inch hot plug drive bays	(Standard)
Drive **8 slots available**	**SAS HDD**	**300GB 10K Hot Plug 2.5-inch SAS HDD** 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
		450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
		600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
		900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
		73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
		146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
		300GB 15K Hot Plug 2.5-inch SAS HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD	**250GB 7.2K Hot Plug 2.5-inch SATA HDD** 1 x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD	**100GB Hot Plug 2.5-inch SAS SSD** 1 x 100 GB SAS SSD, 2.-inch, 6Gb/s	N8150-709
		400GB Hot Plug 2.5-inch SAS SSD 1 x 400 GB SAS SSD, 2.5-inch, 6Gb/s	N8150-710
	SATA SSD	**100GB Hot Plug 2.5-inch SSD** 1 x 100 GB SATA SSD, 2.5-inch, 3Gb/s	N8150-707

NOTE:

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- Use the same rotational speed of the SAS Hard drives in one system.
- SAS and SATA hard drives must be installed in separate drive groups.
- Up to two kinds of drives can be mixed in one system.
- To configure a large-capacity RAID array, it is recommended to configure in RAID 6 or RAID 60 in order to minimize the risk of becoming multiple hard drives failure during the RAID rebuilding process.
- Please download RAID controller driver from the web to install Windows Server 2003 R2 in the configuration. http://www.nec.com/en/global/prod/express/download/index.html

4.2.5 Up to sixteen Drives with RAID 0/1 Controller with 512 MB Cache

Category		Product Name / Description	Part Number
Storage Controller Required		**RAID Controller (512MB, RAID 0/1)** LSI MegaRAID SAS 9267-8i RAID 0/1/10, 512MB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 6Gb/s	N8103-149
RAID BBU Recommended		**RAID Battery Backup Unit** for LSI MegaRAID SAS 9267-8i	N8103-153
Cable		**Internal SAS/SATA Cable** 1 x mini-SAS to 1 x mini-SAS, 6 sets	(Standard)
Drive Cage		**2.5-inch HDD Cage** 8 x 2.5-inch hot plug drive bays	(Standard)
Optional Drive Cage Required		**2.5-Inch HDD Cage** 8 x 2.5-inch hot plug drive bays Including 6sets of 1 x mini-SAS to 1 x mini-SAS cable, SAS expander card	N8154-39
Drive 8 slots available	**SAS HDD**	**300GB 10K Hot Plug 2.5-inch SAS HDD** 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
		450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
		600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
		900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
		73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
		146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
		300GB 15K Hot Plug 2.5-inch SAS HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD	**250GB 7.2K Hot Plug 2.5-inch SATA HDD** 1 x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD	**100GB Hot Plug 2.5-inch SAS SSD** 1 x 100 GB SAS SSD, 2.-inch, 6Gb/s	N8150-709
		400GB Hot Plug 2.5-inch SAS SSD 1 x 400 GB SAS SSD, 2.5-inch, 6Gb/s	N8150-710
	SATA SSD	**100GB Hot Plug 2.5-inch SSD** 1 x 100 GB SATA SSD, 2.5-inch, 3Gb/s	N8150-707

NOTE:

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- Use the same rotational speed of the SAS Hard drives in one system.
- SAS and SATA hard drives must be installed in separate drive groups.
- Up to two kinds of drives can be mixed in one system.
- To configure a large-capacity RAID array, it is recommended to configure in RAID 6 or RAID 60 in order to minimize the risk of becoming multiple hard drives failure during the RAID rebuilding process.
- Please download RAID controller driver from the web to install Windows Server 2003 R2 in the configuration. http://www.nec.com/en/global/prod/express/download/index.html

4.2.6 Up to sixteen Drives with RAID 5/6 Controller with 512 MB Cache

Category		Product Name / Description	Part Number
Storage Controller Required		**RAID Controller (512MB, RAID 0/1/5/6)** LSI MegaRAID SAS 9267-8i RAID0/1/5/6/10/50/60, 512MB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 6Gb/s	N8103-150
RAID BBU Recommended		**RAID Battery Backup Unit** for LSI MegaRAID SAS 9267-8i	N8103-153
Cable		**Internal SAS/SATA Cable** 1 x mini-SAS to 1 x mini-SAS, 6 sets	(Standard)
Drive Cage		**2.5-inch HDD Cage** 8 x 2.5-inch hot plug drive bays	(Standard)
Optional Drive Cage Required		**2.5-Inch HDD Cage** 8 x 2.5-inch hot plug drive bays Including six sets of 1 x mini-SAS to 1 x mini-SAS cable, SAS expander card	N8154-39
Drive 16 slots available	**SAS HDD**	**300GB 10K Hot Plug 2.5-inch SAS HDD** 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
		450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
		600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
		900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
		73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
		146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
		300GB 15K Hot Plug 2.5-inch SAS HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD	**250GB 7.2K Hot Plug 2.5-inch SATA HDD** 1 x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD	**100GB Hot Plug 2.5-inch SAS SSD** 1 x 100 GB SAS SSD, 2.-inch, 6Gb/s	N8150-709
		400GB Hot Plug 2.5-inch SAS SSD 1 x 400 GB SAS SSD, 2.5-inch, 6Gb/s	N8150-710
	SATA SSD	**100GB Hot Plug 2.5-inch SSD** 1 x 100 GB SATA SSD, 2.5-inch, 3Gb/s	N8150-707

NOTE:

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- Use the same rotational speed of the SAS Hard drives in one system.
- SAS and SATA hard drives must be installed in separate drive groups.
- Up to two kinds of drives can be mixed in one system.
- To configure a large-capacity RAID array, it is recommended to configure in RAID 6 or RAID 60 in order to minimize the risk of becoming multiple hard drives failure during the RAID rebuilding process.
- It is recommended to set RAID array configuration drives less than eight in order to minimize the risk of becoming multiple hard drives failure.
- Please download RAID controller driver from the web to install Windows Server 2003 R2 in the configuration. http://www.nec.com/en/global/prod/express/download/index.html

4.2.7 Up to sixteen Drives with RAID 5/6 Controller with 1 GB Cache

Category		Product Name / Description	Part Number
Storage Controller Required		**RAID Controller (512MB, RAID0/1/5/6)** LSI MegaRAID SAS 9267-8i RAID 0/1/5/6/10/50/60, 1 GB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 6Gb/s	N8103-151
RAID BBU Recommended		**RAID Battery Backup Unit** for LSI MegaRAID SAS 9267-8i	N8103-153
SSD Caching Recommended		**MegaRAID CacheCade** for LSI MegaRAID SAS 9267-8i NOTE: - SSD used for cache is required - The SSD capacity which can be used as read cache is up to 512 GB.	N8103-156
Cable		**Internal SAS/SATA Cable** 1 x mini-SAS to 1 x mini-SAS,6 sets	(Standard)
Drive Cage		**2.5-inch HDD Cage** 8 x 2.5-inch hot plug drive bays	(Standard)
Optional Drive Cage Required		**2.5-Inch HDD Cage** 8 x 2.5-inch hot plug drive bays Including six sets of 1 x mini-SAS to 1 x mini-SAS cable, SAS expander card	N8154-39
Drive 16 slots available	**SAS HDD**	**300GB 10K Hot Plug 2.5-inch SAS HDD** 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
		450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
		600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
		900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
		73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
		146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
		300GB 15K Hot Plug 2.5-inch SAS HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD	**250GB 7.2K Hot Plug 2.5-inch SATA HDD** 1 x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD	**100GB Hot Plug 2.5-inch SAS SSD** 1 x 100 GB SAS SSD, 2.-inch, 6Gb/s	N8150-709
		400GB Hot Plug 2.5-inch SAS SSD 1 x 400 GB SAS SSD, 2.5-inch, 6Gb/s	N8150-710
	SATA SSD	**100GB Hot Plug 2.5-inch SSD** 1 x 100 GB SATA SSD, 2.5-inch, 3Gb/s	N8150-707

NOTE:

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- Use the same rotational speed of the SAS Hard drives in one system.
- SAS and SATA hard drives must be installed in separate drive groups.
- Up to two kinds of drives can be mixed in one system.
- To configure a large-capacity RAID array, it is recommended to configure in RAID 6 or RAID 60 in order to minimize the risk of becoming multiple hard drives failure during the RAID rebuilding process.

- It is recommended to set RAID array configuration drives less than eight in order to minimize the risk of becoming multiple hard drives failure.
- Please download RAID controller driver from the web to install Windows Server 2003 R2 in the configuration. http://www.nec.com/en/global/prod/express/download/index.html

5 Optical Drive

Category	Product Name / Description	Part Number
Internal **1 slot available**	**Internal Slim DVD-ROM drive** Slim DVD-ROM drive	N8151-100
	Internal DVD Super Multi Drive Slim DVD Super Multi drive, not including writing software	N8151-104F
External	**External DVD-ROM drive** Slim DVD-ROM drive, Bus powered, 0.8 A required	N8160-85

NOTE:

- Up to 1 optical drive can be connected.

6 Internal Tape / RDX Drives

6.1 Tape / RDX Drive Selection

Refer to the section in accordance with your type of tape drives:

- DAT: Refer to **6.2.1**
- RDX: Refer to **6.2.2**

NOTE:

- Tape devices cannot be directly connected to VMware systems. For VMware systems, it is recommended to connect and configure an additional backup server via network.

6.2 Tape / RDX Configuration

6.2.1 DAT

Category	Product Name / Description	Part Number
Controller	**Internal USB Controller** 1 x USB port	(Standard)
Cable	**Internal USB cable** 1 x Internal USB to 1 x USB device	(Standard)
Drive **1 bay available**	**Internal DAT (USB)** DDS3 / DDS4 / DAT72, Native capacity 36 GB **NOTE**: DDS1 / DDS2 format are not supported	N8151-69
	Internal DAT (USB) DDS4 / DAT72 / DAT160, Native capacity 80 GB **NOTE**: DDS1 / DDS2 / DDS3 format are not supported	N8151-78

6.2.2 RDX

Category	Product Name / Description	Part Number
Controller	**Internal USB Controller** 1 x USB port	(Standard)
Cable	**Internal USB cable** 1 x Internal USB to 1 x USB device	(Standard)
Drive **1 bay available**	**Internal RDX (USB)**	N8151-86

7 PCI Riser Card / PCI Card

Please refer to Supporting PCI Cards and Installable Slots with regard to the position of PCI slot which can mount PCI card supported.

7.1 PCI Riser Card

Product Name / Description	Part Number
PCIe Riser Card Kit 2 x PCIe 3.0 x8	(Standard)
PCIe x16 Riser Card Kit 1 x PCIe 3.0 x16	N8116-25
PCI-X Riser Card Kit 1 x 64-bit/133 MHz PCI-X, 1x PCIe 3.0 x8	N8116-26
PCI Riser Card Kit 2x 64-bit/33 MHz PCI (5V) **NOTE:** The riser card is make-to-order product. Please consult our sales representative in regard to production lead time. The card is not supported on VMware ESXi systems.	N8116-27

7.2 Full Length PCI Card installation Kit

For a full-length PCI card (D=312mm/12.28 in) installation in PCI Slot #1B

Product Name / Description	Part Number
Full Length PCI Card installation Kit For a full-length installation, contains special heat sinks	N8116-28

Note:

- Obtain the graphics board installation kit in addition to this product when to install graphics board.
- Since this product is make-to-order manufacturing, the support is provided individually. Contact our sales representative for details.
- Starts shipping on May 25, 2012.

7.3 Graphics Card Installation Kit

For an installation of the Video card which is used for Micorosoft RemoteFX

Product Name / Description	Part Number
Graphics Card Installation Kit Power cables for Video card (six-pin), a retainer to secure the graphics board	N8116-29

NOTE:

- Since this product is make-to-order manufacturing, the support is provided individually. Contact our sales representative for details.
- This product doesn't support/guarantee installation of the video card.
- Starts shipping on May 25, 2012.

7.4 LAN Controller

Category		Product Name / Description	Part Number
Riser	**GbE**	**Dual Port 1000BASE-T Riser Card** Broadcom® BCM5718 Gigabit Ethernet Controller PCIe 2.0 x8	N8104-135
	10GbE	**Dual Port 10GBASE SFP+ Riser Card** Broadcom® BCM57810 Converged Controller PCIe 3.0 x8 **NOTE**: - N8104-129 SFP+ Module is required to connect with an optical cable. - Up to two SFP+ Modules can be installed. - Supports up to two adapters of 10Gb Converged Network Adapter and 10Gb Network Adapter.	N8104-137
Adapter	**GbE**	**1000BASE-T Adapter** Broadcom ® BCM5718 Gigabit Ethernet Controller PCIe 2.0 x1, FP / FH	N8104-138
		Dual Port 1000BASE-T Adapter Broadcom ® BCM5718 Gigabit Ethernet Controller PCIe 2.0 x1, FP / FH	N8104-132
		Quad Port 1000BASE-T Adapter Broadcom ® BCM5719 Gigabit Ethernet Controller PCIe 2.0 x4, FP / FH **NOTE:** - Network cables with RJ-45 plug covers cannot be used. - Jumbo frames are not supported.	N8104-133
	10GbE	**10GBASE Adapter (SFP+/2ch)** Broadcom NetXtreme II BCM957711 10G SFP+ Dual Port Network Interface Card PCIe 2.0 x8, LP / FH **NOTE**: - N8104-129 SFP+ Module is required to connect with an optical cable. - Up to 2 SFP+ Modules can be installed. - Supports up to 2 adapters covering 10Gb Converged Network Adapter and 10Gb Network Adapter.	N8104-128
		Dual Port 10Gb Converged Network Adapter BROCADE 1020 Dual Port 10Gbps Converged Network Adapter PCIe 2.0 x8, LP / FH, 2 x SFP modules, Max. one adapter **NOTE**: - N8104-129 SFP+ Module is required to connect with an optical cable. - Up to 2 SFP+ Modules can be installed. - Supports up to two adapters of10Gb Converged Network Adapter and 10Gb Network Adapter.	N8104-131
SPF+ Module		**SFP+ Module (10G-SR)** 1 x SFP+ Module for N8104-128 and N8104-137	N8104-129

Teaming feature - Teaming and bonding features

See the table below for supported network interfaces and OS combinations.

Windows supports BASP (Broadcom Advanced Server Program) teaming while Linux supports teaming with bonding function supported by OS.

Network Interface	Team	OS
GbE LAN controller Standard network and N8104-135/-138/-132/-133	Up to four teams per one system Up to four ports per one team	Windows Server Red Hat Linux
10GbE LAN controller N8104-128/137	Up to two teams per one system Up to two ports per one team	Windows Server 2008/2008R2

NOTE:

- Teaming feature is not supported on iSCSI interfaces.
- The network interfaces for teaming must be the same.
- 10GbE LAN teaming must be processed in a single LAN controller.
- When 10GbE and 1GbE LAN teamings are mixed, the teams must be up to four per one system.

7.5 External Storage Controller

7.5.1 RAID Controller

Category	Product Name / Description	Part Number
Controller	**RAID Controller (512MB, RAID0/1/5/6)** LSI MegaRAID SAS 9285-8e RAID0/1/5/6/10/50/60, 1GB, Ext. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 6Gb/s, LP / FH, Max. two adapters	N8103-160
RAID BBU	**RAID Battery Backup Unit** for LSI MegaRAID SAS 9285-8e	N8103-162

NOTE:

- To configure a large-capacity RAID array, it is recommended to configure in RAID 6 or RAID 60 in order to minimize the risk of becoming multiple hard drives failure during the RAID rebuilding process.
- It is recommended to set RAID array configuration drives less than eight in order to minimize the risk of becoming multiple hard drives failure.

7.5.2 Fibre Channel / SAS Controller

Category	Product Name / Description	Part Number
Fibre Channel	**Fibre Channel Controller (1ch)** Emulex LightPulse LPe1250-F8 Host Bus Adapter 8Gb/s, Optical, PCIe 2.0 x8, LP / FH	N8190-153
	Fibre Channel Controller (2ch) Emulex LightPulse LPe12002-M8 Host Bus Adapter 8Gb/s, Optical, PCIe 2.0 x8, LP / FH	N8190-154
SAS	**SAS Controller** LSI SAS3442E-R Host Bus Adapter 3Gb/s SAS, Int. 4 / Ext. 4, SFF-8484 / SFF8470, PCIe x8, LP/FH, Max. three adapters	N8103-104A
	SAS Controller LSI SAS9212-4i4 Host Bus Adapter 6Gb/s SAS, Int. 4 / Ext. 4, 7-pin SATA / SFF-8088, PCIe 2.0 x8, LP/FH, Max. three adapters	N8103-142

7.6 Serial Port Adapter

Product Name / Description	Part Number
Serial Port Adapter Serial port fixed to PCI bracket	N8117-01A

8 Other Add-in Components

8.1 Power Supply Module

Product Name / Description	Part Number
450W Hot Plug Power Supply 1 x 450 Watt 80 PLUS® Platinum	N8181-86F
800W Hot Plug Power Supply 1 x 800 Watt 80 PLUS® Platinum	N8181-87F
1000W Hot Plug Power Supply 1 x 800 Watt 80 PLUS® Platinum	N8181-88F

NOTE:

- The power units must be the same to configure redundancy.
- Use the NEC Power Supply Selector to select appropriate size for power units. For details, please visit the NEC website at:
  http://www.nec.com/en/global/prod/express/collateral/tools/PowerSelector_G01.xls

8.2 Redundant Fan Kit

Product Name / Description	Part Number
Redundant Fan Kit 5 hot plug redundant cooling fans for R120d-2M	N8181-89

8.3 Trusted Platform Module Kit

Product Name / Description	Part Number
Trusted Platform Module Kit TPM 1.2 module	N8115-08

NOTE:

- The kit is not available in China.
- The kit is not removable after attachment.
- "TPM Support" in BIOS setup menu must be activated prior to use of this kit.
- To use Windows BitLocker drive encryption, be sure to keep the "recovery password" of BitLocker function. The recovery password is required to restore data for hardware replacement during a system error.

8.4 Internal Flash Memory

Available socket: 1

Product Name / Description	Part Number
Internal Flash Memory Internal flash memory to enable software and tools in the EXPRESSBUILDR DVD without DVD media **NOTE:** Before use, software and tools must be copied from the EXPRESSBUILDER DVD to the flash memory. The following operations can be performed with the flash memory: - Installation of Windows server with express setup - Installation of Starter Pack—the package of NEC qualified drivers and system setting tools - Installation of NEC ESMPRO Agent and Universal RAID Utility - Performance of the Test and Diagnosis Tool	N8115-05

8.5 Flash FDD

Choose the Flash FDD if you need to prepare an alternative device for a floppy drive.

Product Name / Description	Part Number
Flash FDD USB flash emulating USB floppy disk, Native capacity 1.44 MB	N8160-86

8.6 Front Bezel

Product Name / Description	Part Number
Front Bezel Front bezel for R120d-2M	N8146-26F

9 Add-on Components

9.1 17-inch LCD Console Drawer

Category		Product Name / Description	Part Number
Drawer w/ KVM	**Drawer**	**17inch LCD Console Unit (1U/8port)** 17-inch LCD, US 83-keys Keyboard, Optical mouse, 8 port KVM switch, 1U height	N8143-69F
	Cable	**Switch Unit Connection Cable Set (USB, 1.8m)** 1.8 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(1A)
		Switch Unit Connection Cable Set (USB, 3m) 3 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(03)
		Switch Unit Connection Cable Set (USB, 5m) 5 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(05)
Drawer w/o KVM	**Drawer**	**17inch LCD Console Unit 1U** 17-inch LCD, US 83-keys Keyboard, Optical mouse, 1U height, 4-pin USB B to 4-pin USB A cable 2m, PS/2 Y-splitter cable 2m, 15-pin mini D-sub VGA cable 2m	N8143-76F

9.2 KVM Switch

Category	Product Name / Description	Part Number
KVM Switch	**Server Switch Unit (8 server)** 1U USB 8 port KVM switch	N8191-12F
Cable	**Switch Unit Connection Cable Set (USB,1.8m)** 1.8 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(1A)
	Switch Unit Connection Cable Set (USB,3m) 3 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(03)
	Switch Unit Connection Cable Set (USB,3m) 5 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(05)

9.1 Cable Management Arm

Product Name / Description	Part Number
Cable Management Arm 2U Kit For R120d-2M	N8143-78

9.2 Server Management License

The server integrates the EXPRESSSCOPE Engine 3 as standard. Refer to **Server Management** for the standard management features. For more extensive remote KVM and remote media features, choose the following kit.

Product Name / Description	Part Number
Remote KVM and Media License Kit License for one server. Remote KVM and remote media are enabled regardless of OS status. Remote KVM: - Displays a graphics console on the web browser of the remote terminal (PC/server). - Controls keyboard and mouse via the remote terminals' web browser Remote media: Enables the user to use the CD / DVD / FD / Flash memory of the remote terminals (PC/server) as if accessing the local drives. **NOTE:** Remote KVM and remote media features are not available for virtual machines.	N8115-04

9.3 Medium and Cartridge

Category	Product Name	Drive supported	Part Number
DAT	DAT72(36GB) Medium 5 pack	N8151-69 N8151-78	N8152-08
	DAT160(80GB) Medium 5 pack	N8151-78	N8152-14
	DAT160 WORM (80GB) Medium	N8151-78	N8152-21
RDX	RDX Cartridge (320GB)	N8151-86	N8152-26
	RDX Cartridge (500GB)	N8151-86	N8152-27
	RDX Cartridge (1TB)	N8151-86	N8152-33

References

Server Management

The EXPRESSSCOPE Engine 3, integrated into the server, provides superior remote control and system management features listed in the table below.

		Standard	With Remote KVM and Media License kit
Hardware monitoring	Temperature/voltage/power/ fan /degeneration (memory/hard drive)	✓	✓
	Hardware event log collection	✓	✓
Boot monitoring	Booting, BIOS/POST stall, OS stall, shutdown	✓	✓
Alerting	HW error, Boot error and OS panic (by SNMP, E-Mail)	✓	✓
Remote KVM (via LAN)	POST/BIOS setup, DOS utility	✓[2]	✓
	Panic screen, Boot screen	✓[2]	✓
	Text-based screen (OS console)	✓[2]	✓
	GUI-based screen (OS console)	-	✓
Remote control (via LAN)	Remote reset/power on-off/ dump	✓	✓
	OS shutdown	✓[1]	✓[1]
	Remote media (CD/DVD/FD)	-	✓
	Server Management Command Line Protocol (DMTF compliant)	✓	✓
	Remote control via Web browser (without dedicated app)	✓	✓
	Remote batch	✓	✓
	Scheduling (without UPS)	✓[1]	✓[1]
Others	Set automatic IP address via DNS/DHCP	✓	✓
Remote wakeup	Wake On LAN, Wake On Ring	✓	✓
Centralized management	Monitoring and control of multiple servers	✓	✓
Industry standard	IPMI	2.0	2.0

[1] The feature is not supported on VMware ESXi systems.
[2] The standard serial port is not available for the feature.

OS Support Matrix for PCI Cards

Part number	Product Name	WS 2008R2	WS 2008	WS 2008 x64	WS 2003R2	WS 2003R2 x64	RHEL 6	RHEL 6 x64	RHEL 5	RHEL 5 x64	ESXi 5.0
N8103-149	RAID Controller (512 MB, RAID 0/1)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8103-150	RAID Controller (512 MB, RAID 0/1/5/6)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8103-151	RAID Controller (1 GB,RAID 0/1/5/6)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8103-160	RAID Controller (1 GB,RAID 0/1/5/6)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8103-104A	SAS Controller	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8103-142	SAS Controller	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8190-153	Fibre Channel Controller	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8190-154	Fibre Channel Controller (2ch)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8104-135	Dual Port 1000BASE-T Riser Card	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8104-138	1000BASE-T adapter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8104-132	Dual Port 1000BASE-T Adapter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8104-133	Quad Port 1000BASE-T Adapter	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
N8104-137	Dual Port 10GBASE SFP+ Riser Card	✓	✓	✓	✓	✓	-	-	-	-	-
N8104-128	10GBASE adapter (SFP+/2ch)	✓	✓	✓	-	-	✓	✓	✓	✓	✓
N8104-131	Dual Port 10Gb Converged Network Adapter	✓	✓	✓	-	-	✓	✓	✓	✓	-

Supporting PCI Cards and Installable Slots

Standard Riser Card

Part Number	Product Name	Slots						
	Slot # :	#1A	#1B	#2B	#1C	#2C	#3C [1]	#1D
	PCI Slot:	X8	x8	x8	x4	x4	x8	x8
	Card height:	-	FH	FH	LP	LP	FH	-
	Slot type:	x8	x16	x16	x8	x8	x16	x8
	Installable card length (mm) :	-	312 [2]	312	220	220	220	-
N8103-149	RAID Controller (512 MB, RAID 0/1) [PCIe 2.0 x8]	✓	-	-	-	-	-	-
N8103-150	RAID Controller (512 MB, RAID 0/1/5/6) [PCIe 2.0 x8]	✓	-	-	-	-	-	-
N8103-151	RAID Controller (1 GB,RAID 0/1/5/6) [PCIe 2.0 x8]	✓	-	-	-	-	-	-
N8103-160	RAID Controller (1 GB,RAID 0/1/5/6) [PCIe 2.0 x8]	-	✓	✓	-	✓	✓	-
N8103-104A	SAS Controller [PCIe x8]	-	✓	✓	✓	✓	✓	-
N8103-142	SAS Controller [PCIe 2.0 x8]	-	✓	✓	✓	✓	✓	-
N8190-153	Fibre Channel Controller [PCIe 2.0 x8]	-	✓	✓	-	✓	✓	-
N8190-154	Fibre Channel Controller (2ch) [PCIe 2.0 x8]	-	✓	✓	-	-	✓	-
N8104-135	Dual Port 1000BASE-T Riser Card [PCIe 2.0 x1]	-	-	-	-	-	-	✓
N8104-138	1000BASE-T adapter [PCIe 2.0 x1]	-	✓	✓	✓	✓	✓	-
N8104-132	Dual Port 1000BASE-T Adapter [PCIe 2.0 x1]	-	✓	✓	✓	✓ [2]	✓	-
N8104-133	Quad Port 1000BASE-T Adapter [PCIe 2.0 x4]	-	✓	✓	✓	✓	✓	-
N8104-137	Dual Port 10GBASE SFP+ Riser Card [PCIe 2.0 x8]	-	-	-	-	-	-	✓
N8104-128	10GBASE adapter (SFP+/2ch) [PCIe 2.0 x8]	-	✓	✓	-	-	✓	-
N8104-131	Dual Port 10Gb Converged Network Adapter [PCIe 2.0 x8]	-	✓	✓	-	-	✓	-
N8117-01A	Serial Port Adapter	-	-	-	✓	✓	✓	-

[1] Available in dual-processor configuration

[2] To install a PCI card for more than 220 mm (8.66 in), N8116-28 full-length PCI installation kit is required.

[3] Not available with Windows Server 2003 R2.

N8116-25 PCIe x16 Riser Card Kit

Part Number	Product Name	Slots					
	Slot # :	#1A	#1B	#1C	#2C	#3C [1]	#1D
	PCI Slot:	x8	x16	x4	x4	x8	x8
	Card height:	-	FH	LP	LP	FH	-
	Slot type:	x8	x16	x8	x8	x16	x8
	Installable card length (mm) :	-	312 [2]	220	220	220	-
N8103-149	RAID Controller (512 MB, RAID 0/1) [PCIe 2.0 x8]	✓	-	-	-	-	-
N8103-150	RAID Controller (512 MB, RAID 0/1/5/6) [PCIe 2.0 x8]	✓	-	-	-	-	-
N8103-151	RAID Controller (1 GB,RAID 0/1/5/6) [PCIe 2.0 x8]	✓	-	-	-	-	-
N8103-160	RAID Controller (1 GB,RAID 0/1/5/6) [PCIe 2.0 x8]	-	✓	-	✓	✓	-
N8103-104A	SAS Controller [PCIe x8]	-	-	✓	✓	✓	-
N8103-142	SAS Controller [PCIe 2.0 x8]	-	-	✓	✓	✓	-
N8190-153	Fibre Channel Controller [PCIe 2.0 x8]	-	-	-	✓	✓	-
N8190-154	Fibre Channel Controller (2ch) [PCIe 2.0 x8]	-	-	-	-	✓	-
N8104-135	Dual Port 1000BASE-T Riser Card [PCIe 2.0 x1]	-	-	-	-	-	✓
N8104-138	1000BASE-T adapter [PCIe 2.0 x1]	-	-	✓	✓	✓	-
N8104-132	Dual Port 1000BASE-T Adapter [PCIe 2.0 x1]	-	-	✓	✓[1]	✓	-
N8104-133	Quad Port 1000BASE-T Adapter [PCIe 2.0 x4]	-	-	✓	✓	✓	-
N8104-137	Dual Port 10GBASE SFP+ Riser Card [PCIe 2.0 x8]	-	-	-	-	-	✓
N8104-128	10GBASE adapter (SFP+/2ch) [PCIe 2.0 x8]	-	-	-	-	✓	-
N8104-131	Dual Port 10Gb Converged Network Adapter [PCIe 2.0 x8]	-	-	-	-	✓	-
N8117-01A	Serial Port Adapter	-	-	✓	✓	✓	-

[1] Available in dual-processor configuration

[2] To install a PCI card for more than 220 mm (8.66 in), N8116-28 full-length PCI installation kit is required.

[3] Not available with Windows Server 2003 R2.

N8116-26 PCI-X Riser Card Kit

Part Number	Product Name	Slots						
	Slot # :	#1A	#1B	#2B	#1C	#2C	#3C [1]	#1D
	PCI Slot:	x4	x8	64-bit	x8	x4	x4	x8
	Card height:	-	FH	FH	LP	LP	LP	-
	Slot type:	x8	x16	3.3 V	x8	x8	x8	x8
	Installable card length (mm) :	-	312 [2]	312	167	167	167	-
N8103-149	RAID Controller (512 MB, RAID 0/1) [PCIe 2.0 x8]	✓	-	-	-	-	-	-
N8103-150	RAID Controller (512 MB, RAID 0/1/5/6) [PCIe 2.0 x8]	✓	-	-	-	-	-	-
N8103-151	RAID Controller (1 GB,RAID 0/1/5/6) [PCIe 2.0 x8]	✓	-	-	-	-	-	-
N8103-160	RAID Controller (1 GB,RAID 0/1/5/6) [PCIe 2.0 x8]	-	✓	-	-	✓	✓	-
N8103-104A	SAS Controller [PCIe x8]	-	✓	-	✓	✓	✓	-
N8103-142	SAS Controller [PCIe 2.0 x8]	-	✓	-	✓	✓	✓	-
N8190-153	Fibre Channel Controller [PCIe 2.0 x8]	-	✓	-	-	✓	✓	-
N8190-154	Fibre Channel Controller (2ch) [PCIe 2.0 x8]	-	✓	-	-	-	✓	-
N8104-135	Dual Port 1000BASE-T Riser Card [PCIe 2.0 x1]	-	-	-	-	-	-	✓
N8104-138	1000BASE-T adapter [PCIe 2.0 x1]	-	✓	-	✓	✓	✓	-
N8104-132	Dual Port 1000BASE-T Adapter [PCIe 2.0 x1]	-	✓	-	✓	✓ [3]	✓	-
N8104-133	Quad Port 1000BASE-T Adapter [PCIe 2.0 x4]	-	✓	-	✓	✓	✓	-
N8104-137	Dual Port 10GBASE SFP+ Riser Card [PCIe 2.0 x8]	-	-	-	-	-	-	✓
N8104-128	10GBASE adapter (SFP+/2ch) [PCIe 2.0 x8]	-	✓	-	-	-	✓	-
N8104-131	Dual Port 10Gb Converged Network Adapter [PCIe 2.0 x8]	-	✓	-	-	-	✓	-
N8117-01A	Serial Port Adapter	-	-	-	✓	✓	✓	-

[1] Available in dual-processor configuration

[2] To install a PCI card for more than 220 mm (8.66 in), N8116-28 full-length PCI installation kit is required.

[3] Not available with Windows Server 2003 R2.

N8116-27 64-bit PCI Riser Card Kit

Part Number	Product Name	Slots						
	Slot # :	#1A	#1B	#2B	#1C	#2C	#3C [1]	#1D
	PCI Slot:	x4	64-bit	64-bit	x8	x4	x4	x8
	Card height:	-	FH	FH	LP	LP	LP	-
	Slot type:	x8	5V	5V	x8	x8	x8	x8
	Installable card length (mm) :	-	312 [2]	312	167	167	167	-
N8103-149	RAID Controller (512 MB, RAID 0/1) [PCIe 2.0 x8]	✓	-	-	-	-	-	-
N8103-150	RAID Controller (512 MB, RAID 0/1/5/6) [PCIe 2.0 x8]	✓	-	-	-	-	-	-
N8103-151	RAID Controller (1 GB,RAID 0/1/5/6) [PCIe 2.0 x8]	✓	-	-	-	-	-	-
N8103-160	RAID Controller (1 GB,RAID 0/1/5/6) [PCIe 2.0 x8]	-	-	-	-	✓	✓	-
N8103-104A	SAS Controller [PCIe x8]	-	-	-	✓	✓	✓	-
N8103-142	SAS Controller [PCIe 2.0 x8]	-	-	-	✓	✓	✓	-
N8190-153	Fibre Channel Controller [PCIe 2.0 x8]	-	-	-	-	✓	✓	-
N8190-154	Fibre Channel Controller (2ch) [PCIe 2.0 x8]	-	-	-	-	-	✓	-
N8104-135	Dual Port 1000BASE-T Riser Card [PCIe 2.0 x1]	-	-	-	-	-	-	✓
N8104-138	1000BASE-T adapter [PCIe 2.0 x1]	-	-	-	✓	✓	✓	-
N8104-132	Dual Port 1000BASE-T Adapter [PCIe 2.0 x1]	-	-	-	✓	✓ [3]	✓	-
N8104-133	Quad Port 1000BASE-T Adapter [PCIe 2.0 x4]	-	-	-	✓	✓	✓	-
N8104-137	Dual Port 10GBASE SFP+ Riser Card [PCIe 2.0 x8]	-	-	-	-	-	-	✓
N8104-128	10GBASE adapter (SFP+/2ch) [PCIe 2.0 x8]	-	-	-	-	-	✓	-
N8104-131	Dual Port 10Gb Converged Network Adapter [PCIe 2.0 x8]	-	-	-	-	-	✓	-
N8117-01A	Serial Port Adapter	-	-	-	✓	✓	✓	-

[1] Available in dual-processor configuration

[2] To install a PCI card for more than 220 mm (8.66 in), N8116-28 full-length PCI installation kit is required.

[3] Not available with Windows Server 2003 R2.

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For hard drive capacity measurements, 1 GB = 1 billion bytes. Actual formatted capacity is less.

Revision History

Revision	Date	Description
1.0	March 30, 2012	Initial release